

547, 847

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau(43) International Publication Date  
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number  
**WO 2004/079691 A1**(51) International Patent Classification<sup>7</sup>: **G09B 23/28,**  
G01L 5/00(74) Agents: **MERRYWEATHER, Colin, Henry et al.;** J.A.  
Kemp & Co., 14 South Square, Gray's Inn, London WC1R  
5JJ (GB).(21) International Application Number:  
PCT/GB2004/000906

(22) International Filing Date: 4 March 2004 (04.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0304908.7 4 March 2003 (04.03.2003) GB(71) Applicants (for all designated States except US): **EU-  
ROPEAN MOLECULAR BIOLOGY LABORATORY**  
[DE/DE]; Meyerhofstrasse 1, 69117 Heidelberg (DE).  
**ISIS INNOVATION LIMITED** [GB/GB]; Ewert House,  
Ewert Place, Summertown, Oxford OX2 7SG (GB).

(72) Inventors; and

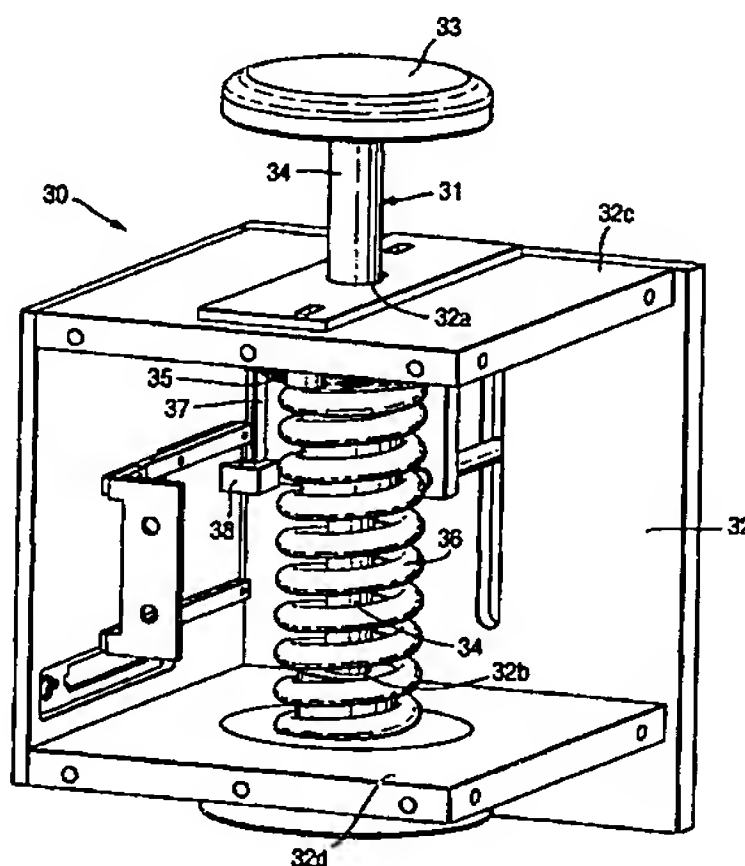
(75) Inventors/Applicants (for US only): **KOHL, Peter**  
[DE/GB]; University of Oxford, Department of Physi-  
ology, Parks Road, Oxford OX1 3PT (GB). **BOULIN,**  
**Christian** [FR/DE]; European Molecular Biology Labora-  
tory, Meyerhofstrasse 1, 69117 Heidelberg (DE).(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: ANALYSIS OF PRE-CORDIAL THUMPS FOR TREATMENT OF A CARDIAC DYSRHYTHMIA



(57) Abstract: A device for analysing manual thumps, applied to simulate pre-cordial thumps for the treatment of a dysrhythmia of the heart of a patient, has an array of force-detecting, proportional sensors (1) having a frequency response of at least 1 kHz, usually 10 kHz or more. A preferred form of sensor (30) has a key (32) for receiving an applied force mounted for movement relative to a support (37) with a spring (33) having a preselected spring constant coupled therebetween. An optical sensor (36) and grating (34) detect the displacement of the key (32) relative to the support (37). This sensor (30) provides advantages of being fast, accurate and truly proportional. The device has an electronic circuit for receiving the output signal of each sensor and outputting the output signals to an external computer (60) running a program to analyse and display the output signals. The device may be used to study the biophysical parameters of a pre-cordial thump or as a teaching tool to train users in the correct application of a pre-cordial thump. The device may also be used to analyse similar impacts in other technical fields.

WO 2004/079691 A1



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*